

**WRITTEN OPINION  
OF THE INTERNATIONAL  
SEARCHING AUTHORITY (SUPPLEMENT)**

International Application Number  
PCT/EP2005/003122

**Point IV.**

This Authority has ruled that the International Application includes several inventions or groups of inventions not linked by a single general inventive concept (Rule 13.1 PCT).

1. The search revealed the following state of the art relevant for assessing the unity of the invention:

**D1:** EP-A-1 318 570 (SUMITOMO WIRING SYSTEMS, LTD) 11 June 2003  
(2003-06-11)

- 1.1 Document **D1** discloses: a plug connection for producing at least one connection through an opening (Fig. 2: Pa) in a partition wall (Fig. 2: P), the plug connection comprising a first and second plug (Fig. 2: 10, 11, 22), which can be plugged together, and at least one of the plugs (Fig. 2: 10) can be sealed from the partition wall (P) via a seal (Fig. 2: 16) that surrounds the opening (Fig. 2: Pa), and at least one of the plugs (Fig. 2: 11, 22) comprising a clamping device which can be engaged with the other plug (Fig. 2: 10) and with which the plugs can be clamped permanently in their plugging-together direction (Fig. 2: CD) with interposition of the partition wall (P) (see Fig. 4: the partition P is clamped using the clamping device between the seal 16 of the lower plug 11, as shown in Fig. 4, and the sealing bush mount 22 of the upper plug 11, 22, as shown in Fig. 4).
- 1.2 **D1** further discloses the subject-matter according to claim 1. According to **D1**, there may be provided in the sealing bush mount (**D1**, Fig. 2: 22) and the clamping lever arranged thereon (**D1**, Fig. 2: 18) a clamping device (cf. also **D1**, description, column 7, paragraphs [0033] and [0034]). The clamping device according to **D1** comprises at

least one sealing device (**D1**, Fig. 2: seal or bush 21) for sealing a connection region between the clamping device and the at least one plug (**D1**, Fig. 2: 11).

1.3 The subject-matter of independent claim 23 is also disclosed by **D1**, the two plugs being clamped with a pivoting movement about an axis (**D1**, Fig. 2: 25) transverse to the passage direction (**D1**, Fig. 2: CD) through the partition wall (**D1**, Fig. 2: P).

2. As the subject-matter of independent claims 1 and 23 and the technical features shared by claims 1 and 23 and 27 and 33, respectively, are already known from **D1** (see also the grounds for the objection under "**point V.**", points 2 and 3), a comparison of the present groups of claims with the aforementioned document reveals that the following features make a contribution to the state of the art and may therefore be regarded as special technical features under Rule 13.2 PCT:

Group 1: Independent claim 1 with dependent claims 3 to 10: plug connection through an opening in a wall with a lever as the clamping device and a sealing arrangement preferably between the lever bearing and plug housing.

Group 2: Independent claim 1 with dependent claims 11 to 16: plug connection through an opening in a wall with a sliding device as the clamping device and a sealing arrangement preferably between an element of the sliding device penetrating an opening in a plug and the plug housing.

Group 3: Independent claim 23 with dependent claim 24: plug connection through an opening in a wall with a clamping device which is capable of pivoting about an axis located transversely to the passage or insertion direction.

Group 4: Independent claim 1 with dependent claim 17 to 21, independent claim 23 with dependent claims 25 and 26, independent claims 27 and 33 with dependent claims 28 to 32: plug connection through an opening in a wall with a locking device for securing one of the plugs on the partition wall.

3. These inventions or groups of inventions are not linked by a single general inventive concept (Rule 13.1).

3.1 Problems which may be regarded as having being solved by the special technical features include:

- Group 1: sealing of a lever clamping device from a plug housing;
- Group 2: sealing of a sliding clamping device from a plug housing;
- Group 3: alternative to a clamping device of a plug connection through an opening in a wall;
- Group 4: securing or holding of a plug in an opening in a wall.

These problems differ from one another or are known in the state of the art (see above).

In addition, there is also no corresponding technical effect of the above-mentioned special technical features of the groups of inventions under Rule 13.2 PCT. As a result, neither the object on which the respective invention is based nor the solutions thereto defined by the special technical features of each invention may provide the basis for a technical reciprocal relationship between the inventions that produces a single general inventive concept.

**Point V.**

1. Reference is made to the following documents:

**D1:** EP-A-1 318 570 (SUMITOMO WIRING SYSTEMS, LTD) 11 June 2003  
(2003-06-11)

**D2:** US-A-5 971 791 (ITOH ET AL) 26 October 1999 (1999-10-26)

- D3:** DE 103 20 460 A1 (TYCO ELECTRONICS AMP GMBH) 18 December 2003 (2003-12-18)
- D4:** DE 298 23 075 U1 (GROTE & HARTMANN GMBH & CO. KG) 4 May 2000 (2000-05-04)
- D5:** EP-A-0 556 762 (THE WHITAKER CORPORATION) 25 August 1993 (1993-08-25)
- D6:** WO 97/08783 A (THE WHITAKER CORPORATION; MACHILL, ANDREAS; KRESSMANN, MARKUS) 6 March 1997 (1997-03-06)
- D7:** EP-A-0 572 012 (SUMITOMO WIRING SYSTEMS, LTD) 1 December 1993 (1993-12-01)
- D8:** EP-A-0 591 972 (SUMITOMO WIRING SYSTEMS, LTD) 13 April 1994 (1994-04-13)
- D9:** US-A-5 785 552 (UCHIDA ET AL) 28 July 1998 (1998-07-28)
- D10:** DE 199 32 113 A1 (AUDI AG) 25 January 2001 (2001-01-25)

## 2. INDEPENDENT CLAIM 1

- 2.1 The present application does not meet the requirements of Article 33 (1) PCT because the subject-matter of claim 1 is not novel within the meaning of Article 33 (2) PCT. Document **D1** discloses (the parenthetical references refer to this document): a plug connection for producing at least one connection through an opening (Fig. 2: Pa) in a partition wall (Fig. 2: P), the plug connection comprising a first and second plug (Fig. 2: 10, 11, 22), which can be plugged together, and at least one of the plugs (Fig. 2: 10) can be sealed from the partition wall (P) via a seal (Fig. 2: 16) that surrounds the opening (Fig. 2: Pa), and at least one of the plugs (Fig. 2: 11, 22) comprising a

clamping device which can be engaged with the other plug (Fig. 2: 10) and with which the plugs can be clamped permanently in their plugging-together direction (Fig. 2: CD) with interposition of the partition wall (P) (see Fig. 4: the partition P is clamped using the clamping device between the seal 16 of the lower plug 11, as shown in Fig. 4, and the sealing bush mount 22 of the upper plug 11, 22, as shown in Fig. 4). According to **D1**, there may be provided in the sealing bush mount (Fig. 2: 22) and the clamping lever arranged thereon (Fig. 2: 18) a clamping device (cf. also description, column 7, paragraphs [0033] and [0034]). The clamping device according to **D1** comprises at least one sealing device (Fig. 2: seal or bush 21) for sealing a connection region between the clamping device and the at least one plug 11.

- 2.2 The subject-matter of claim 1 is also not novel over document **D2** within the meaning of Article 33 (2) PCT. According to **D2** (see, in particular, Fig. 1 and the associated part of the description, column 8, lines 25 to 45), there is provided a clamping device in the form of a clamping screw (Fig. 1: 26) which permanently clamps two plugs (Fig. 1: 20, 22) arranged on opposing sides of a partition wall (Fig. 1: 21) with interposition of the partition wall in the plugging-together direction. The clamping device according to **D2** comprises a seal (Fig. 1: bush 25 or the screw sealing part 25e thereof) for sealing a connection region between the clamping device or clamping screw and a plug (Fig. 1: 22). One of the plugs (Fig. 1: 22) also has a wall seal (Fig. 1: wall sealing part 25d of the bush 25) surrounding an opening (Fig. 1: 21c) in a partition wall (Fig.: 21).

### 3. INDEPENDENT CLAIM 23

- 3.1 The present application does not satisfy the requirements of Article 33 (1) PCT because the subject-matter of claim 23 is not novel within the meaning of Article 33 (2) PCT. Document **D1** discloses (the parenthetical references refer to this document, see in particular column 9, paragraph [0040]): a method of fitting for producing at least one connection through an opening (Fig. 2: Pa) in a partition wall (Fig. 2: P) using a plug connection, the plug connection comprising a first and second plug (Fig. 2: 10, 11), which can be plugged together, and at least one of the plugs (Fig. 2: 10) is

sealed from the partition wall (P) via a seal (Fig. 2: 16) that surrounds the opening (Pa), wherein a clamping device (Fig. 2: 18, 22) of at least one plug (11) is engaged with the other plug (10) and, using the clamping device, the plugs (Fig. 2: 10, 11) are clamped permanently in their plugging-together direction (Fig. 2: CD) with interposition of the partition wall (P). The clamping takes place with a pivoting movement about an axis (Fig. 2: 25) transverse to the passage direction (CD) through the partition wall (P).

- 3.2 The subject-matter of claim 23 is also not novel over document **D3** within the meaning of Article 33 (2) PCT. **D3** discloses all of the features of the preamble of claim 1 (see, in particular **D3**, Fig. 8 and column 3, paragraph [0020]: plug 2, 10; bush 18 with sealing region between plug 10 and wall 14). According to **D3**, a lever which is capable of pivoting about an axis arranged transversely to the plugging-together direction (**D3**, Fig. 1, 2, 8: 8) is used as the clamping device.

#### 4. INDEPENDENT CLAIM 27

- 4.1 Document **D7** is regarded as being the closest state of the art to the subject-matter according to claim 27. **D7** discloses (the parenthetical references refer to this document, see in particular Fig. 1 and 2): a plug connection for producing at least one electrical connection through an opening in a partition wall (Fig. 1: 13), wherein the plug connection comprises a first and a second plug (Fig. 1: 10 in conjunction with column 3, lines 44 to 48), which can be plugged together, and at least the second plug (Fig. 1: 10) can be fixed on the partition wall (Fig. 1: 3) via a mechanical holding device, wherein the mechanical device comprises a locking device (Fig. 1: spacer 12), which is movable between a locked position, in which the second plug (Fig. 1: 10) is secured on the partition wall (Fig. 1: 3), and an unlocked position.

The subject-matter of independent claim 1 differs from the plug connection described in **D7** in that:

F1: The locking device is mounted on the second plug housing by means of a hinge-type connection and is movable between the locked and unlocked positions by a pivoting movement about an axis extending substantially transversely to the passage direction through the partition wall.

- 4.2 The subject-matter according to claim 27 is therefore novel over **D7** (Article 33 (2) PCT).
- 4.3 The object to be achieved by the invention according to claim 27 may be regarded as the provision of an alternative locking device for a plug to be held in a wall opening.
- 4.4 The invention according to claim 27 proposes a pivotable locking device according to feature F1 to achieve this object.
- 4.5 None of the state-of-the-art documents cited in the search report discloses a pivotable locking device of this type.

Documents **D7**, **D8** and **D10** all disclose locking devices which prevent deflection from the catching position by either displacement in the insertion direction (**D7** and **D8**) or displacement transversely to the insertion direction (**D10**).

The subject-matter of claim 27, in particular feature F1, is thus rendered obvious neither by the available state of the art nor by the general specialised knowledge of the relevant person skilled in the art and the invention according to claim 27 therefore involves an inventive step (Article 33 (3) PCT).

## 5. INDEPENDENT CLAIM 33

Claim 33 relates to a method of fitting a plug in an opening in a partition wall. **D7** may also be taken as the closest state of the art to the invention according to claim 33. **D7** discloses the following steps (the parenthetical references refer to this document, see for example Fig. 8A to 8D): positioning of the second plug (Fig. 8: 20) on a first

edge region of the opening of the partition wall (Fig. 8A: lower edge 13b of the opening in the partition wall 13), a locking device (Fig. 8A: 40) being in its unlocked position, tilting of the first plug about the first edge region, as the axis of rotation, until the first plug reaches a position in which it is lockable (see Fig. 8C), moving of the locking device into its locked position (Fig. 8D).

The subject-matter according to claim 33 differs from the method of fitting disclosed in **D7** by the feature corresponding to feature F1 of claim 27, i.e. in that:

F1': The locking device is mounted on the second plug housing by means of a hinge-type connection and is moved from the locked into the unlocked position by a pivoting movement about an axis extending substantially transversely to the passage direction through the partition wall.

The subject-matter according to claim 33 is therefore novel (Article 33 (2) PCT) and involves an inventive step (Article 33 (3) PCT) on the same grounds as cited above with respect to the invention according to claim 27.

6. DEPENDENT CLAIMS 2 to 4, 6 to 8, 10 to 13, 24

The claims discussed hereinafter do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with regard to novelty or an inventive step.

Claim 2: **D1**, Fig. 2, cam groove 29 and cam follower 19; **D2**, Fig. 1, screw part 26c and bolt holder 29;

Claim 3: **D1**, Fig. 2, lever 18 with axis of rotation 25;

Claim 4: The features of this claim were previously used for the same purpose in a similar plug connection, cf. in this regard document **D3**, in particular column 3, paragraph [0021]. For a person skilled in the art, it was



therefore obvious also to apply these features, with corresponding effect, in a plug connection according to document **D1** and thus to arrive at a plug connection according to claim 4.

Claim 6 and  
Claim 7:

The features according to claim 6 or 7 are minor structural modifications which are within the scope of the standard activities of a person skilled in the art on the basis of the factors that he will conventionally consider, especially since the advantages thereby achieved are easily predictable. The subject-matter of claim 6 or 7 therefore also does not involve an inventive step.

Claim 8 and  
Claim 10:

**D1**, Fig. 1: clearly visible catch hook which engages with a catch recess on the lever 18 to secure the lever in the finally fitted state.

Claims 11,  
12 and 13:

The features of these claims were previously used for the same purpose in a similar plug connection, cf. in this regard document **D4**, in particular Fig. 4 and page 14, second paragraph, to page 15, first paragraph (locking slide 143 with guide grooves 141). For a person skilled in the art, it was therefore obvious also to use these features, instead of the lever and with corresponding effect, in a plug connection according to document **D1** and thus to arrive at a plug connection according to claims 11 to 13.

Claim 17: **D1**, Fig. 2, locking claw 17 (capable of resilient deflection and therefore movable from a locked into an unlocked position);

Claim 18: **D2**, Fig. 2, displaceable locking clamp 32 (see also column 6, lines 33 to 41);

Claim 19: **D2**, Fig. 2, catch springs 32c (see also column 6, lines 33 to 41);

- Claim 22: **D2**, Fig. 1, one-piece sealing bush 25;
- Claim 24: **D1**, Fig. 1, catch hook with release device (see also the arguments regarding claims 8 and 10);
- Claim 25: **D1**, Fig. 2, locking claw 17A;
- Claim 26: **D1**, Fig. 2, the locking clamp 17 or 17A "arrests the plug in a direction substantially transverse to the passage direction".

With regard to claims 4 and 11 to 13, reference is also made to documents **D5** and **D6**. **D5** discloses a clamping lever having all of the features according to claim 4, including an actuating element configured as a tooth with involute tooth faces (see **D5**, Fig. 11 and 12). **D6** discloses a sliding device having all of the features of claims 11 to 13, see **D6**, Fig. 2 and 3 and page 7, second paragraph.

With regard to claim 17 to 20, reference is also made to documents **D7** to **D10** (see the sections cited in the search report), all of which disclose displaceable locking devices. According to **D9**, a catch hook is even displaceably mounted and engageable with the plug in a start position and an end position. According to **D7**, **D8** and **D10**, a hook locked to the partition wall is blocked by a slide in order thus to arrest the plug in the opening. For a person skilled in the art, it is obvious to use locking slides of this type in a plug connection according to **D1** or **D2** and thus to arrive at the subject-matters of claims 17 and 18 without inventive input. **D7** to **D9** also disclose engagement of the slides in the locked state using catch means on the slide and on the plug housing (claim 19). In particular, **D9** also discloses engagement in the unlocked position (claim 20). Engagement of the slide in various positions is therefore known from these documents, wherein the features according to claim 20 are to be regarded as a purely constructional solution within the scope of the general capabilities of the relevant person skilled in the art.

7. DEPENDENT CLAIMS 5, 9, 14 to 16, 21, 28 to 32

The combination of features contained in dependent claims 5, 9 and 14 to 16 is neither known from the present state of the art nor rendered obvious thereby, on the following grounds:

Claim 5: The specific configuration of the locking lever, mounted directly on the plug housing, and the corresponding arrangement of the seal in a bearing recess in the plug are neither known from the available state of the art nor rendered obvious thereby.

Claim 9: The specific type of a displaceable device for securing the locking lever is neither known from the available state of the art nor rendered obvious thereby.

Claim 14: The specific configuration of the locking slide, with the seal being arranged in an opening in the plug and an element engaging through this opening, is neither known from the available state of the art nor rendered obvious thereby.

Claims 15 and 16 are dependent on claim 14 and are therefore also novel and inventive.

Claim 21: None of the documents cited in the search report discloses a pivotable locking device having the features according to claim 21 (see also the foregoing remarks concerning independent claims 27 and 33).

Claims 28 to 32 are dependent on claim 27 and therefore also meet the requirements of the PCT with regard to novelty and an inventive step.

**Point VII.**

1. Contrary to the requirements of Rule 5.1 a) ii) PCT, the description refers neither to the relevant state of the art disclosed in documents **D1** to **D3** or **D7** nor to the documents themselves.